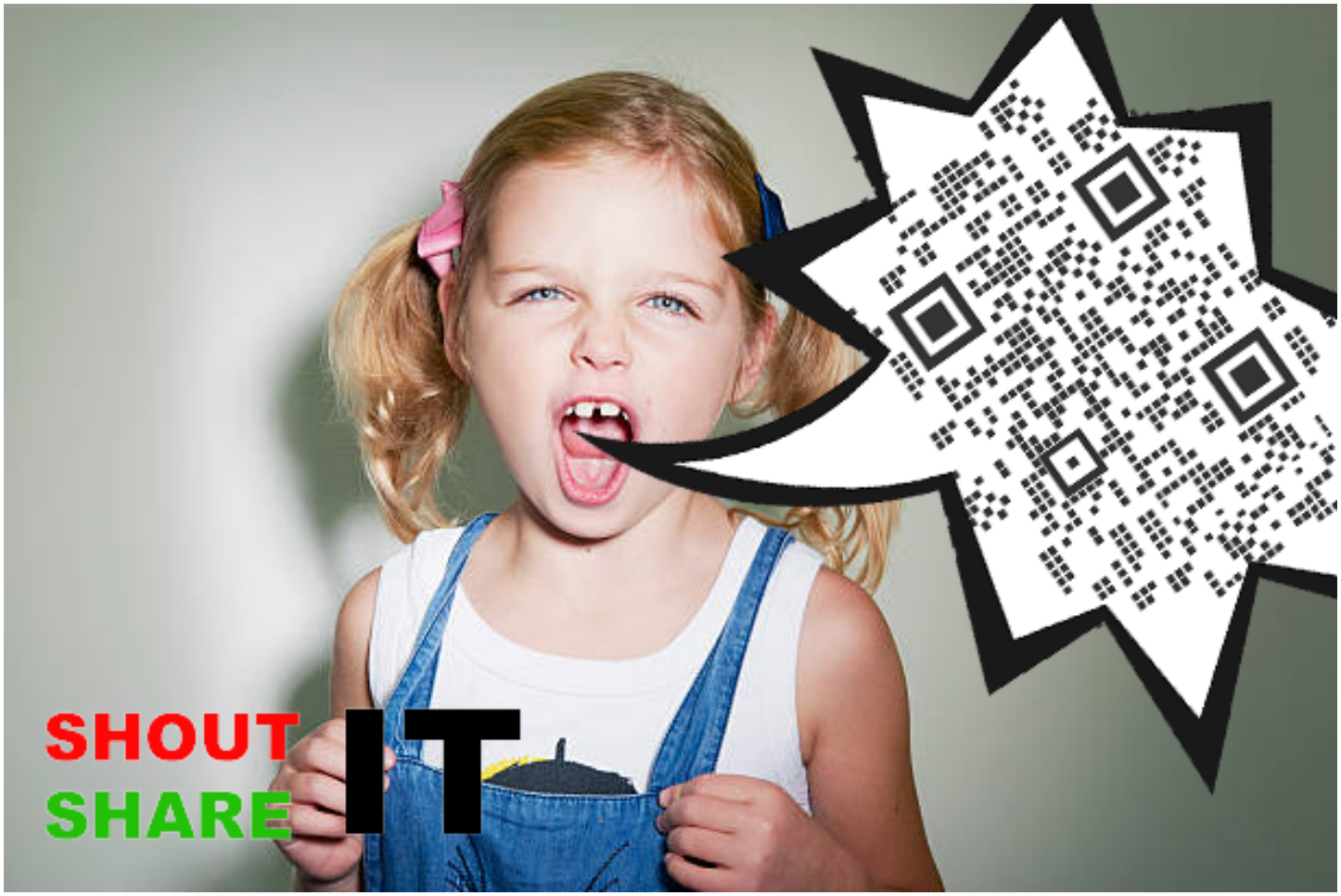
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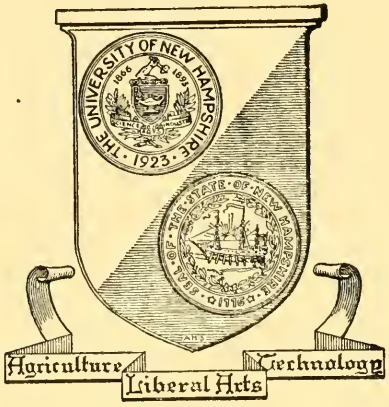

The University
of
New Hampshire

Bulletin 358 July, 1945

THE UNIVERSITY OF NEW HAMPSHIRE

AGRICULTURAL EXPERIMENT STATION

Department of Agricultural and Biological Chemistry

Inspection of Commercial Feedingstuffs

Made for the

State Department of Agriculture

By T. O. Smith and H. A. Davis

The University of New Hampshire

Durham, N. H.

INSPECTION OF COMMERCIAL FEEDINGSTUFFS MADE FOR THE STATE DEPARTMENT OF AGRICULTURE

The inspection of commercial feedingstuffs reported in this bulletin was made under the direction of Honorable Andrew L. Felker, Commissioner of Agriculture. Mr. C. A. Lyon and Mr. F. H. Smart, State Inspectors, collected samples of 280 brands of feedingstuffs which were offered for sale in the State during the year ending June, 1945. The 280 samples represent brands of 54 manufacturers.

REGISTRATION AND LABELING OF FEEDINGSTUFFS

Registration:—The New Hampshire law, entitled an Act to Regulate the Sale of Concentrated Commercial Feedingstuffs, requires registration with the Commissioner of Agriculture of each brand offered for sale. This is usually done by the manufacturer or jobber whether he is located within or outside the State. Feedingstuffs manufactured in other states frequently pass through several middlemen before they reach the local distributor. Under the provisions of the law, if the manufacturer or jobber fails to make registration the dealer is responsible. Dealers who purchase feed for resale must assure themselves that the brands they purchase are properly registered and the license fee is paid or they must assume that responsibility. The official charged with the administration of the law is the Commissioner of Agriculture. All matters relative to registration and all inquiries concerning the law should be addressed to the Commissioner of Agriculture, State House, Concord.

Labeling:—The law requires every manufacturer or dealer who shall sell or offer for sale any concentrated commercial feedingstuff to furnish with each package a clearly printed statement certifying the net weight of the feed contained in the package, the brand name or trademark under which the feed is sold, the name and address of the manufacturer, the ingredients of which the feed is composed, and a chemical analysis stating the minimum percentage only of protein and of fat and the maximum percentage only of crude fiber. In order to secure greater uniformity in the labeling of feeds and in the statement of ingredients, the Association of American Feed Control Officials has adopted definitions and standards. The Association has also approved twenty-two general regulations which "should be adopted by state officials as far as the statutes will permit." There are no conflicts with the New Hampshire feedingstuffs law in these regulations. Manufacturers and dealers are, therefore, expected to conform to the regulations of the Association in all matters not specifically mentioned in the law.

One sentence in the New Hampshire feedingstuffs law reads as follows: " . . . and shall state in bold type upon the container or a tag attached thereto, if a compounded feed, the names of the several ingredients therein contained." To avoid the misinterpretation or deception which may result from the manufacturer's use of indefinite terms in listing the ingredients, the Association of American Feed Control Officials has adopted 192 official definitions of ingredients used in the compounding of feedingstuffs. These definitions are subject to frequent addition and revision. At the present time there are also 15 tentative definitions and seven that have been proposed for future discussion. Tentative definitions are those which have received favorable consideration but have not yet been made official. A 93-page booklet containing the above three classes of definitions, 22 general regulations, 25 resolutions adopted, and other instructive material may be obtained from the Secretary of the Association of American Feed Control Officials, College Park, Maryland. The manufacturer should secure a copy of this booklet and list the ingredients accurately. Carelessness or indifference in listing the ingredients should create sales resistance in the buyer. The purchaser is warranted in concluding that the manufacturer who is inaccurate in specifying the ingredients printed on the tag may be careless in selecting the ingredients he puts into the bag.

PURPOSE OF THE FEEDINGSTUFFS LAW

The chief purpose of the feedingstuffs law is to protect the consumer against the inferior products which doubtless would soon appear on the market if the trade were not under state control. The law is primarily a correct-labeling act. It must not be assumed by the purchaser of feedingstuffs that every brand which meets the manufacturer's guarantee is a high-grade feed. The feedingstuffs law does not prevent the sale of a low-grade feed if it is properly licensed and tagged and is offered for sale in compliance with the law. It would not be in the public interest to legislate against the sale of the lower-grade by-products. They can be fed profitably if bought at a price adjusted to their feeding value. The law does prevent an inferior feed being offered for sale as a high-grade product.

The dealer in purchasing feed from the manufacturer, and the consumer in purchasing feed from the dealer, should make the specification that the feed delivered must comply with the New Hampshire feedingstuffs law. If the feed is not registered; if the protein, fat, and crude fiber are not guaranteed; and if the ingredients of which the feed is composed are not plainly stated on the bag, or on a tag attached thereto, the purchaser is not protected by the state feedingstuffs law.

He then has no recourse under the feedingstuffs law if the feed which he purchases is of inferior quality. The dealer who offers for sale a feedingstuff which has not been registered and which is not guaranteed in compliance with the law is probably indifferent to his customer's interests in other respects. He does not merit either the confidence or the patronage of the consumer. The purchaser's cooperation in refusing to buy a feed which does not conform to the law in every respect will not only help in the enforcement of the law but will at the same time afford the purchaser himself the protection of the law. If the buyer fails to assure himself that the legal requirements have been met, he accepts the feedingstuff at his own risk. The terms used in reporting the chemical analysis of a feedingstuff are briefly defined as follows:

Protein is a collective term for a considerable group of compounds, all of which contain nitrogen. Ingredients high in protein are usually more expensive than the other ingredients, making protein the most important nutrient for consideration in determining the commercial value of a feedingstuff. The nutritional value of the proteins varies widely; therefore a feedingstuff should contain protein from several sources to insure inclusion of all essential types.

Fat is separated from the other components of a feedingstuff by extracting the moisture-free sample with anhydrous ether. In such ingredients as the cereals, the seed-meals and animal products, the extract is nearly pure fat. A few ingredients such as alfalfa meal contain some ether-soluble material which is not fat.

Fiber is composed of cellulose and related compounds. Since crude fibre has little feeding value, the law requires that the maximum fiber be guaranteed rather than the minimum as in protein and fat.

USE OF COMMERCIAL FEEDINGSTUFFS

This bulletin is concerned with the enforcement of the feedingstuff law. It is not within its scope to make recommendations regarding the use of commercial feedingstuffs. The Department of Dairy Husbandry and the Department of Poultry Husbandry are continuously studying feeding problems. The following publications of these departments are free to residents of New Hampshire. Address your request to Mailing Room, University of New Hampshire, Durham, New Hampshire.

Ext. Cir. 195	Adjusting Feed Costs to Reduced Milk Incomes. 4 pp.
Ext. Cir. 208	Feeding Dairy Calves and Heifers. 6 pp.
Folder 10	The Use of Home-Grown Grains in Feeding the Dairy Herd.
Press Bull. 100	Home-Grown Dairy Feeds. 1 p.
Ext. Bull. 67	Turkey Production in New Hampshire. 16 pp.
Ext. Cir. 158	Feeding Chickens. 18 pp.
Ext. Cir. 250	The Home Poultry Flock. 12 pp.
Sta. Bull. 312	Protein Requirements of Chickens. 20 pp.
Sta. Bull. 335	Protein Requirements of Chickens at Various Stages of Growth and Development II. 15 pp.
Sta. Cir. 52	Growth and Feed Standards for New Hampshire. 8 pp.
Sta. Cir. 56	Fine Versus Coarse Grit as a Feed Ingredient for Poultry. 8 pp.

While the word feedingstuff does not appear in all the above titles, no publication is included which does not discuss some aspect of the use of feedingstuffs.

HOW COST OF INSPECTION AFFECTS PRICE

The cost of a feedingstuff inspection includes the drawing and the analysis of the samples, and the publication and mailing of the annual bulletin. The funds from which these costs are paid are accumulated from the license fees which the manufacturer is required to pay annually on each brand of feedingstuff offered for sale within the state. Since manufacturing and distributing costs are finally paid by the consumer, the purchaser of feedingstuffs is interested in the effect of the cost of the inspection on the retail price per ton. The sixteenth census of the United States Department of Commerce under the heading, specified farm expenditures, 1939, reports the retail value of feeds for domestic animals and poultry sold in New Hampshire in that year as $7,619,245. A calculation based on this valuation and on the known

costs of the inspection shows that the cost to purchasers is less than four cents per ton of feed, a fraction of a cent per 100-pound bag. The 1939 figure for the retail value of feedingstuff sold annually in the state is used, since it is the most recent authoritative figure available. It is estimated the present figure is approximately double that amount. If the estimated valuation is used the cost of the inspection is less than two cents per ton.

CONFORMITY TO THE GUARANTEES

Of the 280 brands analyzed, 23 brands, or 8.2 per cent, were below the guaranteed amount of protein. Six of these were less than one-half per cent below guarantee. Twenty-nine brands, or 10.4 per cent, were below guarantee in fat. Eight of these were less than one-fourth per cent below guarantee. Twenty brands, or 7.1 per cent, contained an excessive amount of crude fiber.

Resolution 20, p. 14 of the Official Publication of the Association of American Feed Control Officials, referred to above reads in part "that urea is to be used only in such limited quantities as to insure that the total amount present does not exceed 3% of the (grain) ration." Five brands contained urea as one of the ingredients. None exceeded the 3 per cent urea permitted under the resolution.

In the tabulation of the analytical figures (p. 11 to p. 20 inclusive) those figures one-half per cent or more below guarantee in protein, one-fourth per cent or more below guarantee in fat, and one per cent or more above guarantee in crude fiber are printed in *italic* type.

Table I shows the percentage of samples failing to conform to the guarantee in each of the last twenty years.

TABLE I. PERCENTAGE OF SAMPLES ANALYZED IN YEARS 1926-1945 NOT CONFORMING TO GUARANTEES

Year	Per cent below guarantee in Protein		Per cent below guarantee in Fat		Per cent high in Crude Fiber
	Less than 0.5 per cent	0.5 per cent or more	Less than 0.25 per cent	0.25 per cent or more	
1926	8.0	16.0	4.0	10.0	6.0
1927	8.3	16.4	5.8	13.6	5.9
1928	9.1	20.7	4.3	9.3	7.9
1929	9.5	20.2	2.8	9.3	6.5
1930	4.8	13.1	4.0	8.0	3.9
1931	1.8	7.2	5.9	9.7	5.3
1932	1.8	1.4	5.0	8.1	2.8
1933	1.3	3.6	7.5	9.8	3.6
1934	3.0	3.4	3.9	7.1	9.8
1935	2.4	3.0	4.2	8.5	9.9
1936	2.9	5.2	5.5	8.3	12.2
1937	2.8	4.2	3.0	6.0	11.0
1938	2.9	8.1	9.8	10.8	11.5
1939	1.9	3.3	6.8	9.3	8.7
1940	2.9	4.0	6.2	6.7	7.5
1941	1.1	2.6	4.7	6.7	5.6
1942	2.6	3.5	3.7	4.5	7.4
1943	3.7	2.7	7.7	8.6	7.4
1944	8.2	9.0	10.7	19.7	6.9
1945	2.1	6.1	2.9	7.5	7.1

REQUESTS BY INDIVIDUALS FOR THE ANALYSIS OF FEEDINGSTUFFS

Under the feedingstuffs law the Agricultural Experiment Station is charged only with the analysis of samples of feedingstuffs collected by the State Inspector under the direction of the Commissioner of Agriculture. It does, each year, however, analyze a considerable number of samples drawn by individuals representing stock purchased by them for their own use. Frequently the reason for sending the sample is that the feed is suspected of causing sickness or death of livestock or poultry. While in very rare instances the feed may have caused the trouble, disease is usually found to be the cause. Many times feeders, suspecting the feed, lose valuable time in the treatment of the disease by sending a sample of the feed for analysis and waiting for the report. Losses could have been reduced had a veterinarian or poultry specialist been consulted immediately and the proper treatment given promptly. The most conclusive method of determining whether or not the feed is the cause of the trouble is a biological test. Such a test can be conducted on the premises of the feeder. If chicks have died and the feed is suspected, confine in sanitary pens two lots of healthy chicks. Give to one lot the suspected feed and to the other lot a feed known to be good. Should the chicks receiving the suspected feed become ill and the others remain healthy, there is evidence the feed is the cause. Under such circumstances notify the Commissioner of Agriculture and an official sample will be drawn. The official sample will be analyzed to determine if the manufacturer is responsible.

The most common reason the purchaser has for asking to have the sample analyzed is to satisfy himself whether the feed meets its guarantee and if it does not, to obtain evidence upon which to base a claim for shortage. The Station can assume no responsibility for the drawing of an unofficial sample but can attest only the accuracy of the analysis of the sample as submitted. It is practically impossible to secure a representative sample of a feedingstuff composed of several ingredients varying widely in composition without the aid of a sampling tube for drawing the sample and proper equipment for mixing it. A feed may contain as one of its ingredients gluten meal averaging 40 per cent protein, and as another ingredient oat mill feed averaging five per cent protein. These materials are so different in physical condition that the shaking in transit tends to separate them even though they may have been perfectly mixed by the manufacturer before bagging. It is apparent that an accurate sample of a ton of this feed can only be had by drawing a core from several bags. The official method requires ten. Since a representative sample is as essential as an accurate analysis in judging the value of a shipment of feed, it is evident that a

satisfactory adjustment can seldom be effected on the basis of an unofficial sample.

Notwithstanding the objections which may be raised to the analysis of samples taken without proper sampling equipment, the Station is disposed to continue this work as long as there is evidence that it constitutes a useful service. The samples so submitted should be drawn from at least ten bags in a manner which will insure that the small lot sent for analysis is as accurately representative as possible of the large lot from which it is taken. Because of the cost of laboratory work and materials, an analysis is not usually warranted on a sample drawn from less than a one-ton lot of feed.

A one-pound sample is sufficient for the analysis. It should be sent in a glass jar or tin box to prevent loss of fine particles and a change in the moisture content. In order that the department may have a record of the sample analyzed, and may know whether or not the manufacturer and the dealer are complying with the requirements of the law, the following information should be submitted concerning each sample.

Brand .....

Manufacturer .....

Address .....

Guarantee:

Protein .....

Fat .....

Crude Fiber .....

Ingredients .....

.....

.....

Dealer .....

Address .....

Number of bags in lot .....

Number of bags sampled .....

Price per 100 pounds .....

Your name .....

Your address .....

Your reason for requesting analysis.....

.....

Manufacturer Brand	Pounds in 100 lbs. of Feedingstuff					
	Protein		Fat		Crude Fiber	
	Guaranteed *	Found	Guaranteed *	Found	Guaranteed *	Found
Allied Mills						
Chicago, Illinois						
Economy Laying Mash	18.00	18.91	3.00	3.49	8.00	4.77
Wayne All Mash Breeder	15.00	15.77	3.00	5.54	7.00	5.76
Wayne All Mash Egg	15.00	17.69	3.00	3.72	8.00	6.51
Wayne Breeder Mash	20.00	21.67	3.50	4.77	8.00	7.82
Wayne Chick and Broiler Ration	19.00	21.62	3.00	3.91	8.00	7.49
Wayne Chick Starter	18.00	19.49	3.00	4.39	7.00	6.95
Wayne Complete Calf Feed	16.00	18.91	3.00	4.33	9.00	8.22
Wayne 16% Dairy Ration	16.00	18.04	3.00	4.39	9.00	6.34
Wayne 18% Dairy Ration	18.00	21.01	3.00	3.53	10.00	6.94
Wayne 24% Dairy Ration	24.00	25.57	3.50	3.25	9.00	6.20
Wayne Egg Mash	20.00	20.31	3.00	4.59	8.00	6.63
Wayne Fitting Ration	12.00	16.51	3.00	4.01	9.00	8.28
Wayne Flushing Mash	20.00	21.84	3.00	3.91	6.00	4.71
Wayne Growing Mash	16.00	17.60	3.00	3.29	7.00	6.06
Wayne Horse Feed	9.50	11.60	2.50	3.94	10.00	8.99
Wayne 26% Mash Supplement	26.00	28.54	3.50	4.22	10.00	8.22
Wayne Pork Maker	14.00	16.20	3.00	2.72	7.00	3.95
Wayne Rabbit Feed	13.00	14.40	3.00	5.36	16.00	11.99
Wayne Turkey Growing Mash	20.00	20.67	3.00	3.87	8.00	6.14
Wayne Turkey Starting Mash	25.00	27.36	3.50	4.88	8.00	7.57
American Maize Products Co.						
Roby, Indiana						
Cream of Corn Gluten Feed	23.00	26.22	2.00	2.07	9.50	8.43
Archer-Daniels Midland Co.						
Minneapolis, Minnesota						
ADM Flax Plant By-Product	5.00	6.92	1.50	2.49	50.00	43.82
E. W. Bailey & Co.						
Montpelier, Vermont						
Bailey's Pennant Brand Breeder Mash	20.00	20.97	3.00	4.91	7.00	5.79
Bailey's Pennant Brand Chick Starter	18.00	18.65	3.00	4.73	6.50	5.81
Bailey's Pennant Brand Complete Egg Ration	16.00	17.47	3.00	3 27	7.00	4.68
Bailey's Pennant Brand Complete Grower	15.00	16.77	3.00	3.69	7.00	5.45
Bailey's Pennant Brand Complete Layer Breeder	16.00	17.20	3.00	3.96	7.00	5.85
Bailey's Pennant Brand 16% Dairy Ration	16.00	16.25	3.00	2.94	8.00	6.45
Bailey's Pennant Brand 18% Dairy Ration	18 00	18.74	3.00	3.77	8.50	7.08
Bailey's Pennant Brand 20% Dairy Ration	20.00	21.23	3.60	4.21	8.00	7.30
Bailey's Pennant Brand Fitting Ration	14.00	14.75	3.00	3.86	7.50	5.78

* Protein and fat not less than, crude fiber not more than.

Manufacturer Brand	Pounds in 100 lbs. of Feedingstuff					
	Protein		Fat		Crude Fiber	
	Guaranteed *	Found	Guaranteed *	Found	Guaranteed *	Found
E. W. Bailey & Co.—*Concluded*						
Bailey's Pennant Brand Horse Feed	10.50	12.52	3.00	4.13	9.00	6.60
Bailey's Pennant Brand Laying Mash	20.00	20.40	3.00	3.85	7.00	6.97
Bailey's Pennant Brand Laying Pellets	16.00	18.21	3 00	3.91	7.00	4.82
Bailey's Pennant Brand Pig Feed	17.00	17.34	3.00	3.75	7.00	4.61
Bailey's Pennant Brand Super-Pellets	24.00	26.27	3.00	5.20	7.00	6.57
Bailey's Pennant Brand Victory 12 Utility Ration	12.00	15.85	2.50	3.40	9.00	4.50
Beacon Milling Co. Cayuga, New York						
Beacon 20	20 00	22.24	3.50	3.93	9.00	6.65
Beacon Breeders' Mash	20.00	21.22	3.50	4.72	7.50	6.86
Beacon Growing Mash	18.00	18.74	3.00	4.06	7.50	6.01
L. Clayton Berry Lebanon, New Hampshire						
Colonial Dairy Ration	20.00	21.14	4.00	4.29	12.00	6.85
David C. Chase Smithtown, New Hampshire						
Chase Laying Mash	18.00	19.48	4.50	4.75	10.00	6.73
Colebrook Feed Co. Colebrook, New Hampshire						
Colebrook 18% Dairy Ration	18.00	*17.10*	3.50	3.69	8.00	6.97
Consolidated Rendering Co. Boston, Massachusetts						
Corenco 50% Meat and Bone Scrap	50.00	50.96	6.00	9.45	....	....
O. A. Cooper Co. Humboldt, Nebraska						
Cooper's Best Broiler Mash	19.00	19.35	4.25	4.57	7.00	5.95
Succulent Dairy Feed	11.00	12.21	1.60	1.79	24.00	16.49

* Protein and fat not less than, crude fiber not more than.

CORN PRODUCTS REFINING CO. NEW YORK, NEW YORK Diamond Corn Gluten Meal	41.00	41.24	1.00	3.99	6.00	4.50
CHARLES M. COX CO. BOSTON, MASSACHUSETTS						
Wirthmore Breeder Mash	20.00	21.05	3.00	4.87	7.00	5.47
Wirthmore Complete Breeder Ration	15.00	17.47	3.00	3.83	6.00	4.39
Wirthmore Complete Egg Ration	15.00	16.81	3.00	3.36	6.00	4.25
Wirthmore Complete Growing Ration	15.00	15.81	3.00	3.21	7.00	4.37
Wirthmore 14 Fitting Ration	14.00	14.67	4.00	3.67	8.00	5.03
Wirthmore Growing Mash	17.50	*15.54*	3.00	4.41	7.00	4.29
Wirthmore Laying Mash	20.00	19.61	3.00	5.59	7.00	5.05
Wirthmore Pig and Hog Feed	17.00	19.13	3.00	3.40	9.00	4.92
Wirthmore Poultry Flush	17.50	18.43	3.00	3.52	6.00	3.94
Wirthmore 16 Record Ration	16.00	16.46	3.50	4.43	8.00	6.51
Wirthmore Standard 20 Dairy Ration	20.00	22.02	3.00	3.24	8.50	6.30
Wirthmore Starter and Broiler	20.00	*18.04*	3.00	4.22	6.50	5.06
Wirthmore Stock Feed	10.00	10.15	2.00	3.48	11.00	10.21
Wirthmore Turkey Fattening Ration	16.00	17.47	3.00	3.83	7.00	4.32
Wirthmore Turkey Starter	25.00	26.14	3.00	3.37	7.00	5.17
Wirthmore Twin Mix Calf Ration	16.00	16.42	4.00	4.29	7.00	5.75
DELAWARE MILLS DEPOSIT, NEW YORK						
Delaware Breeder Mash	20.00	*17.57*	3.00	5.14	8.00	6.15
Delaware Egg Mash Pellets	18.00	19.65	3.00	4.79	9.00	6.16
Delaware Fitting Ration	14.00	14.00	4.00	4.34	10.00	7.56
Delaware Growing Mash	18.00	22.69	3.00	5.30	7.00	6.57
Delaware Laying Mash	20.00	*19.35*	3.00	4.56	8.00	6.74
Delaware Milk Flushing Mash	12.00	12.96	2.00	2.06	6.00	6.00
Delaware Pig and Hog Feed	16.00	19.75	4.00	5.28	8.00	6.95
Delaware Starter and Broiler Ration	18.00	18.00	3.50	4.64	7.00	6.18
Delaware Starter Grower Layer	17.00	19.39	3.00	5.12	7.00	5.87
Delaware Sweet 20% Dairy Feed	20.00	*19.18*	4.00	4.91	10.00	7.49
Indian Sweet 20% Dairy Feed	20.00	20.71	3.00	5.21	11.00	7.73
DIETRICH AND GAMBRILL FREDERICK, MARYLAND						
D & G All Purpose Complete Ration	15.00	17.90	3.50	4.32	8.00	6.35
D & G Pen Mar 20% Dairy Feed	20.00	22.24	3.50	4.02	10.00	5.99
D & G Pen Mar Stock Feed	10.00	12.34	3.00	3.57	12.00	6.54
D & G Pig and Hog Meal	18.00	19.65	3.50	4.17	8.00	5.88
DODGE GRAIN CO. METHUEN, MASSACHUSETTS						
Dodge Starting Growing Mash	16.00	18.78	4.00	*3.58*	10.00	7.13
EAGLE ROLLER MILL CO. NEW ULM, MINNESOTA						
Eagle Wheat Bran	14.00	15.80	4.00	5.07	12.00	10.57

* Protein and fat not less than, crude fiber not more than.

Manufacturer Brand	Pounds in 100 lbs. of Feedingstuff					
	Protein		Fat		Crude Fiber	
	Guaranteed *	Found	Guaranteed *	Found	Guaranteed *	Found
Eastern States Farmers' Exchange **West Springfield, Massachusetts**						
Eastern States All-Mash Developer	14.00	15.33	2.50	3.46	6.50	4.67
Eastern States All-Mash Egg	15.50	16.72	2.00	3.25	6.50	5.00
Eastern States Broiler Ration	18.00	20.31	2.00	4.05	6.00	4.87
Eastern States Developer	18.00	18.82	2.50	3.56	7.50	5.78
Eastern States Egg Mash	20.00	19.85	2.00	3.97	7.00	5.86
Eastern States Eighteen	18.00	19.30	3.50	4.59	8.50	6.23
Eastern States Fitting Ration	14.00	14.93	3.00	3.73	9.50	7.75
Eastern States Fulpail	20.00	20.40	3.50	5.22	8.50	7.08
Eastern States Horse Feed	10.50	11.51	3.00	3.98	10.00	5.53
Eastern States Pig Starter and Breeder	20.00	21.05	2.50	3.92	8.00	5.84
Eastern States Pork Builder	14.00	15.89	2.00	4.30	6.50	4.91
Eastern States Starting Mash	18.00	19.70	2.00	3.43	6.50	4.69
Eastern States Sixteen	16.00	17.34	3.50	5.02	8.00	6.39
Elmore Milling Co. **Oneonta, New York**						
Elmore Calf Grain Ration	13.00	13.05	4.00	4.77	10.00	6.33
Elmore Chixsaver	20.00	23.64	4.00	3.92	7.00	6.38
Elmore Complete Market Egg Mash	15.00	15.59	3.50	3.62	8.00	*12.21*
Elmore Milk Grains Eighteen	18.00	21.80	4.00	4.23	10.00	8.18
John W. Eshelman & Sons **Lancaster, Pennsylvania**						
Eshelman Pennsy 16 Dairy Feed	16.00	17.99	3.00	4.91	11.00	8.94
Eshelman Red Rose 16 Dairy	16.00	17.51	4.00	4.17	11.00	6.13
Eshelman Red Rose 24 Dairy Feed	24.00	26.35	4.00	4.56	11.00	7.85
Eshelman Red Rose Fitting Ration	12.00	12.60	4.00	4.56	7.00	5.12
Eshelman Red Rose Laying Mash	20.00	21.19	3.50	4.53	7.50	6.29
Eshelman Red Rose Pig and Hog Meal	18.00	18.00	3.50	3.86	10.00	8.06
Federal Mill **Lockport, New York**						
Dairy Maid Soft Winter Wheat Bran	13.50	14.58	3.50	4.56	13.00	9.61
Dairy Maid Soft Winter Wheat Mixed Feed	13.00	15.80	3.50	4.14	9.50	6.72
Flory Milling Co. **Bangor, Pennsylvania**						
Flory Breeder Mash	21.00	21.06	4.00	4.11	7.50	7.63
Flory Health Tonic Mash	11.00	16.07	3.00	3.14	5.00	5.14
Flory Starter Mash	18.00	19.92	4.00	5.15	7.50	5.87

* Protein and fat not less than, crude fiber not more than.

General Mills Detroit, Michigan						
Corn and Oats Chop	9.00	10.07	3.50	5.13	8.00	6.06
Dandy 20% Dairy	20.00	21.71	3.00	4.36	11.50	10.16
Farm Service 18% Dairy	18.00	18.04	3.50	3.71	11.00	7.11
Farm Service Dandy 18% Dairy	18.00	18.52	3.00	3.29	11.50	9.94
Farm Service 14% Fitting Ration	14.00	15.37	4.00	4.11	10.00	6.26
Farm Service Growing Mash	19.00	19.13	3.50	3.55	7.50	6.68
Farm Service Horse Feed	9.00	11.29	3.00	4.28	9.50	9.49
Farm Service Laying Mash	20.00	19.60	3.50	3.94	8.50	6.49
Farm Service Laying Mash Pellets	20.00	21.49	3.50	4.06	8.00	5.86
Larro Breeder Mash	20.00	19.77	3.00	4.68	8.00	6.08
Larro Breeder Mash, Pelleted	20.00	20.88	4.00	4.02	8.00	5.91
Larro 18% Broiler Feed	18.00	19.22	3.00	3.42	7.00	6.79
Larro Calf Builder	24.00	25.00	4.00	5.03	5.50	4.19
Larro Chick Builder	19.00	19.83	3.00	3.49	7.00	5.96
Larro 20% Dairy Feed	20.00	20.92	3.00	3.59	12.00	7.19
Larro Egg Mash	18.00	18.12	3.25	4.10	8.00	6.49
Larro Egg Mash, Pelleted	20.00	21.10	3.00	4.35	8.00	5.64
Larro Scratch Grains	9.50	11.12	2.00	2.80	4.00	2.19
Larro Sow and Pig Builder	17.50	17.54	3.50	3.94	8.00	5.96
Larro Turkey Builder	24.00	24.33	3.00	4.01	7.50	5.81
Larro Turkey Finisher	19.00	20.18	2.50	3.85	7.50	5.92
Service Hog Feed	16.00	18.25	3.00	4.56	7.00	5.74
Washburn's Gold Medal Hard Wheat Bran and Wheat Screenings	14.00	16.64	3.50	5.19	12.00	11.00
Glidden Co. Indianapolis, Indiana						
Glidden Growing Mash	17.00	18.95	2.00	3.37	9.00	7.55
Glidden Horse Feed	10.00	14.89	2.00	2.69	9.00	7.80
D. H. Grandin Milling Co. Jamestown, New York						
Grandin's Hi-Pro Pellets	20.00	21.36	3.00	4.28	8.00	7.09
Grandin's Horse Feed	9.50	11.12	3.50	3.62	11.00	6.64
Grandin's Laying Mash	18.00	18.24	3.00	3.12	8.00	6.50
Grandin's 20 Milk Maker	20.00	22.46	4.00	5.35	10.00	8.58
Grandin's Pig and Hog Ration	18.00	18.21	3.50	3.52	10.00	4.07
Grandin's Start-To-Finish Mash	18.00	18.48	3.00	4.21	8.00	6.41
Grandin's Starter and Broiler Mash	18.00	18.78	3.00	4.89	8.00	7.89
Grandin's Stock Feed	9.00	9.76	4.00	*3.47*	12.00	8.95
Grandin's 16 Test Cow Ration	16.00	16.77	3.50	3.59	9.00	7.42
Grandin's 18 Test Cow Ration	18.00	20.70	4.00	5.41	9.00	*10.37*
Grandin's Turkey Starter	24.00	26.09	3.00	3.91	8.00	7.68
E. C. & W. L. Hopkins Greenfield, New Hampshire						
Cheshire Mash	18.00	18.00	4.00	5.13	7.00	6.11
Granite State Breeder Mash	20.00	21.67	4.00	4.22	6.00	6.70
Granite State Calf Meal	19.00	19.70	3.50	5.15	4.00	4.67

* Protein and fat not less than, crude fiber not more than.

Manufacturer Brand	Pounds in 100 lbs. of Feedingstuff					
	Protein		Fat		Protein	
	Guaranteed *	Found	Guaranteed *	Found	Guaranteed *	Found
E. C. & W. L. Hopkins—*Concluded*						
Granite State Chick Starter	20.00	21.75	4.00	5.03	6.00	5.73
Granite State Complete Breeder Mash	15.00	18.30	4.00	3.90	7.00	4.98
Granite State Egg Mash	19.00	22.77	4.00	4.61	5.50	6.46
Granite State Fitting Ration	12.00	16.59	4.00	4.19	8.00	7.12
Granite State Growing Mash	19.00	21.71	4.00	4.19	6.00	6.00
Granite State Hog Ration	18.00	*17.21*	5.00	*4.01*	7.00	3.57
Granite State Stock Feed	9.00	10.55	5.00	*3.52*	10.00	6.19
Page 16% Dairy	16.00	19.87	4.00	4.62	9.00	5.79
Page Dairy	20.00	22.59	4.00	5.22	9.00	7.34
International Milling Co. Minneapolis, Minnesota						
Blackhawk Wheat Bran	15.00	16.77	2.50	3.79	12.00	9.25
Blackhawk Wheat Standard Middlings	16.00	*14.89*	3.00	5.97	9.00	6.29
Ralph P. Johnson & Son Potter Place, New Hampshire						
Johnson's Chick Starter	16.00	19.13	3.00	5.22	10.00	6.24
Johnson's Complete Laying Mash	15.00	16.81	3.00	4.37	8.00	5.32
Johnson's Dairy Feed	18.00	20.49	3.00	4.03	9.00	6.73
Johnson's Growing Mash	14.00	18.17	3.50	4.49	8.00	5.29
Johnson's Mash Feed	18.00	19.04	4.00	4.58	7.00	5.65
Johnson's Pig and Hog Feed	15.00	17.55	2.50	4.55	7.00	5.61
Maine Fish Meal Co. Portland, Maine						
Maine Vitamin D Concentrate	50.00	50.13	15.00	22.12	....	....
Maritime Milling Co. Buffalo, New York						
B-B Complete Chick Starter Ration	20.00	20.14	3.50	5.02	7.00	5.54
B-B Complete Laying Ration	17.00	17.16	3.50	4.19	7.00	5.61
B-B Conditioning Mash	14.00	16.51	2.50	3.44	4.00	4.29
B-B Egg Mash	20.00	21.05	3.50	5.13	9.00	5.88
B-B Horse Feed	9.00	12.08	2.00	3.76	10.00	7.15
Bull Brand B-B 20 Dairy Ration	20.00	24.12	3.50	4.72	9.00	7.07
Dollar Maker Egg Mash	19.00	19.13	3.50	4.46	8.00	5.22

* Protein and fat not less than, crude fiber not more than.

MERRIMACK FARMERS' EXCHANGE CONCORD, NEW HAMPSHIRE						
Merrimack All Mash	15.00	17.77	4.00	*3.48*	6.00	4.94
Merrimack Breeder Mash	19.50	21.54	5.00	*4.51*	6.00	5.59
Merrimack Calf Starter	18.00	22.68	4.00	4.32	4.00	*5.99*
Merrimack Chick and Broiler Mash	18.50	19.09	4.00	*3.69*	6.00	5.78
Merrimack Chick Starter	18.00	20.70	4.00	*3.58*	5.00	5.87
Merrimack 16% Dairy Ration	16.00	19.57	3.50	4.72	8.50	7.04
Merrimack 18% Dairy Ration	18.00	19.04	4.00	4.03	8.50	8.37
Merrimack Fitting Ration	14.00	17.34	4.50	4.74	8.00	8.45
Merrimack Goat Ration	14.00	17.82	4.50	*3.74*	8.00	6.84
Merrimack Growing Mash	17.00	17.69	4.25	*3.86*	6.00	5.84
Merrimack Hog Ration	15.00	16.81	4.00	4.30	7.00	5.19
Merrimack Horse Feed	11.00	13.92	3.50	3.76	6.00	6.41
Merrimack Laying Mash	19.00	19.52	4.25	*3.80*	6.00	5.11
Merrimack 20% Milk Ration Sweetened	20.00	*18.21*	3.50	4.05	8.50	6.63
Merrimack Pig Ration	17.00	17.25	5.00	*3.51*	7.00	5.10
Merrimack Rabbit Pellets	14.00	19.35	4.50	*4.13*	8.50	5.56
Merrimack Turkey Growing Mash	20.00	*18.76*	3.00	3.95	8.00	6.08
MILLER CEREAL MILLS OMAHA, NEBRASKA						
Hominy Feed	10.00	11.95	6.00	8.11	5.00	4.29
GEORGE Q. MOON & CO. BINGHAMTON, NEW YORK						
Moon's 90 Molasses Horse Feed	9.00	12.30	3.00	3.53	10.00	7.48
Moon's Special A Laying Mash	18.00	18.08	3.00	4.38	9.00	6.94
Special A Dairy 20% Ration	20.00	20.14	3.00	4.24	10.00	8.20
NATIONAL DISTILLERS PRODUCTS CORP. NEW YORK, NEW YORK						
Produlac	27.00	29.24	5.00	5.43	10.50	10.34
NEUMOND CO. ST. LOUIS, MISSOURI						
Neumond Dried Brewers' Grains	24.00	26.09	4.50	6.59	18.00	14.08
NEW ENGLAND GRAIN CO. PORTLAND, MAINE						
New England Sterling Laying Mash	18.00	18.74	4.00	*3.66*	8.00	5.81
New England Sweetened Horse Feed	9.00	12.43	3.00	3.66	9.00	7.34
New England Pig and Hog Ration	15.00	*13.78*	4.00	5.05	10.00	5.89
3 in 1 Mash Starting Growing and Laying	17.00	17.78	4.00	4.01	7.00	5.61
OGDEN GRAIN CO. UTICA, NEW YORK						
Biddy Laying Mash	18.00	19.57	4.00	4.19	7.00	6.75
Pilgrim Layer and Breeder	19.00	19.70	4.00	4.65	7.00	6.83
Pilgrim Starter and Broiler Ration	19.00	*18.36*	4.00	4.52	7.00	7.20
Pilgrim Starter-Grower-Layer	15.00	18.56	4.00	3.86	8.00	7.17

* Protein and fat not less than, crude fiber not more than.

Manufacturer Brand	Pounds in 100 lbs. of Feedingstuff					
	Protein		Fat		Crude Fiber	
	Guaranteed *	Found	Guaranteed *	Found	Guaranteed *	Found
Oswego Soy Products Corp.						
Oswego, New York						
Old Process Expeller 41% Soybean Oil Meal.	41.00	41.85	4.00	5.67	7.00	6.29
Soybean Oil Meal	41.00	42.33	4.00	4.42	7.00	8.97
Park & Pollard Co.						
Boston, Massachusetts						
Doublex 18% Dairy Ration	18.00	20.05	3.50	3.17	12.00	6.61
Go-Tu-It Pig and Hog Ration	15.00	17.16	2.50	2.08	8.00	5.25
Lay or Bust Dry Mash	18.00	20.92	3.00	4.10	7.00	6.26
Park & Pollard Breeder Mash	20.00	20.57	3.00	3.68	7.00	6.90
Park & Pollard Chick Starter	18.00	19.87	3.00	3.84	7.00	5.27
Park & Pollard Fitting Ration	12.00	13.44	3.00	3.65	9.00	6.60
Park & Pollard Fleshing Pellets	16.00	17.73	3.00	3.48	7.00	5.34
Park & Pollard Growing Feed	16.00	18.04	3.00	3.04	7.00	5.53
Park & Pollard Laying Pellets	18.00	18.52	3.00	3.03	7.00	6.13
Park & Pollard Starter and Broiler Mash	18.00	18.48	3.00	3.39	7.00	6.18
Park & Pollard Turkey Grower	20.00	22.24	3.00	3.07	7.00	6.94
Park & Pollard Turkey Starter	26.00	26.70	3.00	5.32	7.00	6.05
Pecos Valley Alfalfa Mill Co.						
Chandler, Arizona						
15% Alfalfa Meal	15.00	15.59	1.50	1.55	30.00	27.85
Pillsbury Flour Mills Co.						
Minneapolis, Minnesota						
Pillsbury's Fancy Wheat Middlings	13.00	16.51	4.00	4.85	8.50	7.59
Pillsbury's Hard Wheat Bran	14.00	16.99	4.00	4.70	12.00	10.09
Quaker Oats Co.						
Chicago, Illinois						
Ful-O-Pep Broiler Mash	19.00	20.05	3.50	4.46	8.00	5.17
Ful-O-Pep 18% Dairy Ration	18.00	20.23	3.50	3.76	9.00	6.77
Ful-O-Pep 24% Dairy Ration	24.00	25.52	4.00	4.72	10.00	6.99
Ful-O-Pep Growing Mash	19.00	19.22	4.00	4.63	7.00	6.32
Ful-O-Pep Laying Mash	20.00	19.73	3.50	4.37	8.00	8.56
Peterborough Oat Feed	3.50	4.11	1.00	2.03	32.50	30.66
Quaker 20% Protein Dairy Ration	20.00	21.93	3.00	4.92	12.00	10.01
Quaker Sugared Schumacher Feed	10.00	11.03	3.00	3.43	12.00	9.17
Ralston Purina Co.						
St. Louis, Missouri						
Purina B & M Cow Chow	16.00	16.94	3.50	5.29	10.00	8.21
Purina Breeder Lay Chow	22.00	24.21	3.50	4.90	8.00	6.47

* Protein and fat not less than, crude fiber not more than.

RALSTON PURINA CO.—*Concluded*						
Purina Breeder Layena	15.50	17.29	3.50	6.84	8.00	6.66
Purina Broiler Chow	18.00	22.85	3.50	4.56	7.00	5.92
Purina Calf Startena	19.50	20.84	2.50	3.34	9.50	7.45
Purina Chick Growena	17.00	19.44	3.00	3.57	7.00	5.67
Purina Chick Growing Chow	23.00	22.24	3.50	4.95	7.00	5.47
Purina Chick Startena	18.00	20.53	3.50	4.69	7.00	3.92
Purina Cow Chow	18.00	18.04	3.00	4.75	10.00	8.64
Purina Dry and Freshening Chow	12.50	14.32	2.00	3.89	14.00	8.57
Purina Eastern Cow Chow	20.00	20.92	3.00	4.92	12.00	8.16
Purina Eggena	15.50	16.50	3.00	4.11	8.00	5.87
Purina Lavena	15.50	17.07	3.00	4.79	8.00	5.70
REX GRAIN AND MILLING CO. BUFFALO, NEW YORK						
Rex Crown Horse Feed	10.00	11.60	3.00	4.01	9.00	5.74
RODNEY MILLING CO. KANSAS CITY, MISSOURI						
Heart of America Pure Wheat Bran	14.50	16.64	3.50	4.15	10.00	8.82
SAUNDERS MILLS TOLEDO, OHIO						
Alfalfa Meal	13.00	9.75	1.50	1.90	33.00	32.71
SOUTH END HAY AND GRAIN MANCHESTER, NEW HAMPSHIRE						
20% Dairy Ration	20.00	21.54	4.00	4.66	8.00	*10.06*
Feedboard Egg Mash	19.00	20.88	4.00	5.09	7.00	7.35
Feedboard Grower	17.50	18.78	4.00	4.95	6.50	7.00
Feedboard Starter and Broiler Ration	20.00	20.92	3.50	5.10	7.00	7.53
F. B. SPAULDING CO. LANCASTER, NEW HAMPSHIRE						
Spaulding's Dairy Feed	18.00	20.05	4.00	3.84	9.00	7.14
SPENCER KELLOGG & SONS CHICAGO, ILLINOIS						
Linseed Oil Meal	34.00	38.04	3.50	5.61	9.00	7.73
A. E. STALEY MFG. CO. DECATUR, ILLINOIS						
Staley's Corn Gluten Feed	23.00	25.78	1.50	2.71	8.00	6.30
UNITY FEEDS BOSTON, MASSACHUSETTS						
Life Saver Mash	17.00	20.05	3.00	3.99	8.00	5.97
Unity Breeder Mash	18.00	20.09	3.00	3.60	7.00	5.42
Unity Chick Starter	18.00	23.03	3.50	5.44	7.00	6.64
Unity 18% Dairy Ration	18.00	18.74	3.50	3.93	10.00	7.79

* Protein and fat not less than, crude fiber not more than.

Manufacturer Brand	Pounds in 100 lbs. of Feedingstuff					
	Protein		Fat		Crude Fiber	
	Guaranteed *	Found	Guaranteed *	Found	Guaranteed *	Found
UNITY FEEDS—*Concluded*						
Unity Fitting Ration	12.00	13.97	3.50	3.69	7.00	6.87
Unity Horse Feed	10.00	14.93	3.00	4.01	9.00	7.12
Unity Laying Mash	18.00	20.57	3.00	4.16	7.00	6.42
Unity Pig and Hog Ration	17.00	20.31	3.50	4.45	8.00	5.78
Unity Turkey Starting and Growing Mash	22.00	*20.46*	3.50	3.70	7.00	4.75
VALLEY DEHYDRATION PLANT McALLEN, TEXAS						
Dried Citrus Pulp	5.50	6.39	2.50	2.59	10.50	*11.57*
VARNA MILLING CO. VARNA, ILLINOIS						
Golden Glow Broiler Mash	20.00	22.94	3.50	4.68	8.00	3.32
Golden Glow 18% Dairy Ration	18.00	18.95	3.50	4.34	10.00	7.36
Golden Glow 20% Laying Mash	20.00	23.34	4.00	4.70	8.00	3.41
WAYNE COUNTY GRANGERS FEED CORP. CLYDE, NEW YORK						
Superior Calf Grower	15.00	18.25	4.00	*3.74*	8.00	6.46
Superior 20% Dairy Feed	20.00	*19.09*	4.00	*3.42*	10.00	7.89
Superior Fitting Ration	14.00	14.23	3.50	3.30	9.00	7.88
Superior Growing Mash	16.00	17.47	3.50	3.84	7.50	6.45
Superior Hog Ration	16.00	18.25	3.50	3.46	7.00	4.87
Superior Horse Feed	10.00	12.13	3.00	3.70	9.00	7.17
Superior Laying Mash	18.00	18.00	3.50	3.73	7.50	5.68
Superior 24% Supplemental Feed	24.00	23.60	3.50	3.64	10.00	6.59
H. K. WEBSTER CO. LAWRENCE, MASSACHUSETTS						
Blue Seal Breeder Mash	20.00	*18.50*	4.00	4.27	6.50	6.16
Blue Seal 16 Dairy Ration	16.00	17.12	4.00	4.08	9.00	6.76
Blue Seal 20 Dairy Ration	20.00	20.14	4.00	4.27	9.00	7.81
Blue Seal Egg Mash	18.00	18.82	3.50	3.78	6.50	5.51
Blue Seal Fitting Ration	14.00	16.11	4.00	3.96	9.00	7.52
Blue Seal Growing Mash	18.00	18.25	4.00	4.03	7.00	5.66
Blue Seal Stock Feed	8.50	12.26	3.00	3.70	17.00	8.81
Blue Seal Succulent Feed	10.00	12.52	1.50	3.40	18.00	8.82

* Protein and fat not less than, crude fiber not more than.